REMARKS

Claims 2-16 and 27 are pending in this application. Claim 27 is amended to recite that (a) the low power glow discharge and the high power glow discharge are executed in the same plasma treatment chamber; (b) the same organometal is employed for the low power glow discharge and the high power glow discharge; and (c) the low power glow discharge and the high power glow discharge are executed at the same frequency. Support for the amendment can be found, for example, in reference to Fig. 4 and the description at page 13, lines 11-15 (the same frequency), in reference to Fig. 5 and the description at page 14, lines 11-35 (showing the change in microwave output within the same plasma treatment chamber) and at page 10, lines 14-15 (single kind of organometal) and also as practiced in the working examples. No new matter is introduced by this amendment.

Claim Rejections - 35 USC § 103

Claims 2, 6-8,11-16 and 27 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 5,616,369 to Williams et al in view of U.S. Application Publication No. 2003/0143821 to Niino et al. Williams et al was cited as disclosing a process of executing a power glow discharge meeting the terms of present claim 27 (col. 3, lines 21-28), except for the feature of executing the low power discharge for forming the first CVD film and executing the high power discharge for forming the second CVD film. Niino et al was cited as disclosing this feature. The reason for rejection was that it would have been obvious to modify the process of Williams et al in the same manner as taught by Niino et al.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the following. Specifically, (A) Williams et al fails to disclose step (a) of presently amended claim 27; (B) Niino et al fails to disclose step (c) of presently amended claim 27; and (C) there is no

apparent reason which could lead one skilled in the art to combine Williams et al and Niino et al to arrive at the presently claimed invention.

The invention is directed to a method of forming a metal oxide film having a gas-barrier property on a surface of a predetermined substrate by plasma CVD using a treatment gas which contains a gas of an organometal and an oxidizing gas. The method comprises executing a low power glow discharge so as to carry out a reaction chiefly between the organometal contained in the treatment gas and thereby form a first CVD film on the surface of the substrate, and executing a high power glow discharge so as to react the organometal with the oxidizing gas and thereby form a second CVD film on the first CVD film. Further, (a) the low power glow discharge and the high power glow discharge are executed in the same plasma treatment chamber; (b) the same organometal is employed for the low power glow discharge and the high power glow discharge; and (c) the low power glow discharge and the high power glow discharge are executed at the same frequency.

According to the present invention, a first CVD film is formed by a low power glow discharge and a second CVD film is formed by a high power glow discharge. However, these films are not mutually independent and exist as an inseparable, single-piece construction. The CVD film formed according to the present invention contains a first layer containing a relatively large amount of carbon (the first CVD film) and a second layer containing little carbon (the second CVD film). That is, the ratio between the metal, the carbon, and the oxygen components differs among the respective layers.

Williams et al discloses a method of repeated deposition of silicone oxide (SiO_x) using a reactive gas containing an organosilicon and oxygen in a plasma. The Examiner concluded that

a plurality of SiO_x depositions carried out according to Williams et al could be used to form the first and second CVD films according to the presently claimed invention.

However, the method of present claim 27 differs from Williams et al in that the substrate in Williams is removed from a chamber between a first and a second deposition of a SiO_x coating in order to remove foreign surface particles. In particular, Williams et al discloses that the plastic substrate therein is conveyed to a second chamber to remove foreign surface particles. Thus, the repeated depositions in Williams are not carried out in the same plasma treatment chamber, as required by step (a) of the amended claim 27 of the present invention.

Further, Williams et al does not teach or suggest changing the power output during the process of forming the SiO_x depositions. In contrast, claim 27 of the present invention requires executing both a low power glow discharge and a high power glow discharge.

Moreover, the method of Williams et al does not provide the CVD film wherein a layer containing a relatively larger amount of carbon and the layer containing little carbon are formed into a single-piece construction. Williams et al also does not disclose this feature of the present invention.

Niino et al does not cure the deficiencies of Williams et al. Niino et al discloses varying the frequency of a high frequency power in order to carry out the plasma process on a substrate using a glow discharge. Thus, Niino et al is different from the amended claim 27 of present invention requiring in step (c) that the low power glow discharge and the high power glow discharge are executed at the same frequency.

Furthermore, Niino et al inevitably requires varying the frequency, as such a feature is required in order to maintain a uniform composition within the deposited film. In contrast, the present invention specifically discloses that the composition of the first CVD film having a

relatively large amount of carbon is different from the composition of the second CVD film having little carbon.

Accordingly, there is no apparent reason which would lead one of ordinary skill to combine Williams et al, which requires keeping the frequency constant, with Niino et al, which recites varying the frequency, to arrive at the presently claimed invention. Accordingly, this rejection is overcome, and withdrawal is respectfully requested.

Claims 3-5 and 9-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,616,369 to Williams et al in view of U.S. Application. Publication. No. 2003/0143821 to Niino et al and further in view of U.S. Patent No. 4,395,313 to Lindsay et al. Lindsay et al was cited as disclosing a low power in a range of 20-90 watts and the high power of not lower than 100 watts.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the following.

Lindsay et al discloses forming a film using a low power output and a high power output. However, the process of forming a film disclosed in Lindsay involves electrodepositing, and is not a plasma process. Thus, Lindsay et al does not disclose forming a low power glow discharge and a high power glow discharge as required by claim 27. Further, Lindsay et al does not remedy the above shortcomings of Williams et al and Niino et al.

For the foregoing reasons, claims 3-5 and 9-10 would not have been obvious over any combination of Williams et al, Niino et al, and Lindsay et al. Accordingly, this rejection is overcome, and withdrawal of this rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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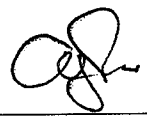
Respectfully submitted,



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